



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,008	08/24/2001	Clark I. Bright	56760US008	3576

7590 11/17/2004

Office of Intellectual Counsel  
3M Innovative Properties Company  
PO Box 33427  
St. Paul, MN 55133-3427

EXAMINER

JACKSON, MONIQUE R

ART UNIT PAPER NUMBER

1773

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/939,008

Applicant(s)

BRIGHT, CLARK I.

Examiner

Monique R Jackson

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 39,40,50,73-76 and 79-146 is/are pending in the application.
- 4a) Of the above claim(s) 39,40,50,73-76,102,103,109 and 115-145 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 79-101,104-108,110-114 and 146 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/18/04 has been entered.
2. The amendment filed 8/18/04 has been entered. Claims 39, 40, 50, 73-76, and 79-146 are pending in the application. Claims 39, 40, 50, 73-76, 102, 103, 109 and 115-145 have been withdrawn.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### *Priority*

4. As recited in the prior office action, the Examiner notes that the instant application is a division of 09/419,870 filed October 18, 1999, which claims priority to provisional application 60/106,871 filed November 2, 1998. However, upon a review of the provisional application, it was determined that the instantly claimed invention (*and portions of the specification*) is not fully supported by the provisional application and hence the Applicant is not afforded the effective date of the provisional application. Specifically, the Examiner notes that the provisional application fails to disclose the polymer layers as layers of organic **dielectric** polymer as instantly claimed. Further it is noted that the provisional application does not teach or suggest **multiple** transparent conductive oxide, transparent metal or transparent conductive metal nitride **layers separated by a polymer layer** as instantly claimed in independent claims

79 and 84. The provisional application discloses the use of a polymer smoothing basecoat layer on the substrate, the use of multilayer dielectric or TCO barriers with PML coatings, and a barrier of alternate PML organic and  $\text{Al}_2\text{O}_3$  layers but does not disclose **multiple** transparent conductive oxide, transparent metal or transparent conductive metal nitride **layers separated by a dielectric polymer layer**. The Examiner specifically notes that the provisional application is completely silent with regards to metal nitride layers. Hence, as previously noted, the effective date of the instant application is therefore the actual filing date of the parent application, October 18, 1999.

***Claim Rejections - 35 USC § 102***

5. Claims 79-90, 92-97, 100, 104-108, 110-114 and 146 are rejected under 35 U.S.C. 102(e) as being anticipated by Affinito (USPN 6,268,695) for the reasons recited previously and restated below. Affinito teaches an environmental barrier material for an organic light emitting device wherein the barrier has a foundation and a cover, both of which have a top of three layers of (a) first polymer layer, (b) a ceramic layer, and (c) a second polymer layer, wherein the foundation and/or the cover may have at least one set of intermediate barrier each having an intermediate polymer layer with an intermediate ceramic layer thereon, wherein the OLED is constructed upon a flexible polymer substrate with the cover layer placed over the OLED and the foundation placed upon the substrate between the substrate and the OLED (Abstract; Col. 3, lines 27-40; Figure 2.) The ceramic layer(s) are preferably formed by vacuum deposition of a metal oxide, metal nitride, metal carbide, and are preferably substantially transparent including **indium tin oxide** (*amorphous, conductive oxide as instantly claimed*), indium oxide, tin oxide, aluminum nitride or silicon nitride, silicon oxide or aluminum oxide (*dielectric oxides*) (Col. 3, lines 27-

65.) The polymer layers are the same as the instantly claimed layers formed by vacuum deposition of an acrylic or methacrylic resin by depositing the monomer and then curing the layer such as PML layers (Col. 1; Col. 3-4.) Affinito specifically teaches an example comprising the following structure: 150 substrate/142 polymer/144 ceramic/132 polymer/134 ceramic/136 polymer/160 OLED/142 polymer/144 ceramic/132 polymer/134 ceramic/136 polymer which reads upon the instantly claimed invention including the limitations with respect to a barrier layer on both sides of the electronic device, an acrylic hardcoat, a barrier between the substrate or device and a layer of organic polymer, an amorphous layer, dielectric polymer layer is crosslinked, barrier between substrate and device, organic polymer layer between substrate or device and barrier or over barrier, a barrier with one or more pairs of organic dielectric polymer and transparent conductive oxide (Figure 2, Col. 2-3.) Affinito further teaches that the invention provides a flexible, transparent, environmental barrier to encapsulate LEP devices such as OLED or electroluminescent device that permits viewing while preventing ingress of oxygen and water vapor from the environment (Col. 2, lines 1-42; Col. 4, lines 7-21.) With respect to Claims 110-111, the Examiner takes the position that the oxygen permeability and water vapor permeability of the invention taught by Affinito would inherently be within the instantly claimed ranges given that the materials are the same as the instant invention and the layers are produced by the same method as the instant invention.

***Claim Rejections - 35 USC § 103***

6. Claims 91, 98, 99 and 101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Affinito in view of Nilsson et al (US 2003/0184222 A1.) The teachings of Affinito are discussed above. Though Affinito teaches that the ceramic layer may be formed by transparent conductive

or dielectric oxides and nitrides and combinations thereof, Affinito does not specifically teach that the ceramic layer is formed by a three layer configuration as in instant Claim 91 or an additional dielectric oxide/nitride layer in combination with the conductive oxide layers as in instant Claims 98-99 and 101. However, given that Affinito teach that the ceramic layer(s) may be produced by any of these materials or combinations thereof, and that multiple ceramic layers may be provided, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize any combination of these materials or any combination of layers of these materials in producing the invention taught by Affinito given the reasonable expectation of success. Further, though the transparent metal oxide and/or metal nitride layers taught by Affinito read upon the general term "transparent metal layers" as in instant Claim 101, Affinito does not teach the incorporation of a transparent metal layer or metallic film other than as an oxide, nitride, carbide or oxynitride. However, Nilsson et al teach that a transparent barrier film for encapsulating and protecting polymer-based electronic devices such as polymer-based light emitting devices are preferably provided with a thin nonreactive metal layer such as aluminum in addition to one or more nitride layers to provide improved barrier properties to the protective film and hence, it would have been obvious to one having ordinary skill in the art at the time of the invention to incorporate a transparent metal layer into the barrier composite taught by Affinito to provide improved barrier properties.

#### ***Response to Arguments***

7. Applicant's arguments filed 8/18/04 have been fully considered but they are not persuasive. First, with regards to the Affinito reference, the Applicant argues that the reference is not prior art because it has an effective filing date after the date of the provisional application of

the instant case. The Applicant argues that “Several of the claims are fully supported”, citing sections of the provisional application for specific claims. In response, the Examiner first notes that in order for the Applicant to be provided the benefit of the earlier provisional application filing date, **all** of the claims must be fully supported by the provisional application not “several” of the claims. In addition, as discussed above in detail, the provisional application fails to provide support for the specific claims noted by the Applicant, particularly independent claims 79 and 84. The Applicant further argues that Affinito fails to teach “conductive” metal oxide layers arguing that Affinito’s ceramic layers are stoichiometric ceramic layers that are non-conductive because when ITO is referred to as “ceramic”, having the stoichiometric formula as shown and is not said to be conductive, the Applicant argues that it is assumed to be nonconductive. However, the Examiner respectfully disagrees noting that Affinito first recites the term “metal oxide” and considering Affinito does not recite that the metal oxide is specifically non-conductive, the Examiner takes the position that one having ordinary skill in the art would clearly envisage “conductive” and “non-conductive” metal oxides. Affinito further recites the use of “indium tin oxide (ITO)” at Col. 3, line 57, and again at line 63 but this time with “ITO,  $\text{In}_2\text{O}_3 + \text{SnO}_2$ ” in parenthesis wherein one could argue that the parenthetical phrase refers to two species of indium tin oxide – 1) tin doped indium oxide or ITO as commonly abbreviated in the art, and 2) the undoped stoichiometric mixture of indium oxide and tin oxide. Hence, the Examiner argues that the section at Col. 3, lines 54-65 does not imply that the ITO is non-conductive as argued by the Applicant and that the reference, taken it is broadest interpretation, clearly provides a teaching of ITO in general wherein one skilled in the art would clearly envisage conductive ITO given that the abbreviation “ITO” in the art encompasses “tin

doped indium oxide". Further, the Examiner notes that ITO having the stoichiometric formula shown would still provide some level of conductivity, as well as the other metal oxides taught by Affinito, given that the instant claims and the specification provide no definition of the required level of conductivity or for that matter, what time of conductivity is meant by the broad term "conductive" in the claims (Refer to Itoh et al, USPN 4,537,814, which teaches a ceramics coating layer that may be a conductive transparent ceramic coating layer such as indium tin oxide composed of indium oxide including tin oxide for 5%, wherein the reference specifically refers to the conductive indium tin oxide as indium oxide with tin oxide as opposed to tin-doped indium oxide.) Lastly, the Examiner notes that the term "ceramic" when referring to a metal oxide does not imply that the metal oxide is not conductive and refers the Applicant to references which utilize conductive ceramics (Ali et al, USPN 5,356,947 or Itoh et al.)

8. In terms of Claims 91, 98, 99 and 101, the Applicant argues that Affinito's statement with regards to the ceramic layers being formed from "combinations thereof" refers to a combination of ceramics in a layer not that ceramic layers of different materials may be combined in any order. However, the Examiner respectfully disagrees and believes that the Applicant may be providing their own limited interpretation of the teachings of Affinito. Affinito states, "The first and/or second ceramic layer(s) may be any ceramic including but not limited to metal oxide, metal nitride...indium tin oxide (ITO) and combinations thereof." Hence, this sentence, even without the phrase "and combinations thereof", clearly states that the first ceramic layer may be selected from any of these materials, and that second ceramic layer may also be selected from any of these materials. This sentence and the remaining paragraph do not state that the two ceramic layers must be of the same single material or same mixed composition and on the




Art Unit: 1773

contrary, actually implies for the term "and/or" that the two layers, independent of one another, may be formed from any of the suitable materials cited or combinations thereof. With respect to Nilsson et al, the Examiner notes that the Applicant's arguments are not directed to the element or teaching of Nilsson et al that the Examiner has replied upon in the reference for the rejection and hence it is assumed that the Applicant does not disagree with the Examiner's reasoning.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Monique R. Jackson  
Primary Examiner  
Technology Center 1700  
November 12, 2004